

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-10 (canceled)

1 **Claim 11 (original):** A regenerative optical amplifier
2 comprising:

3 a resonator having first and second reflective mirrors
4 forming ends of a roundtrip path for light, and an
5 amplifying portion for amplifying light in said roundtrip
6 path;

7 first and second Pockels cells respectively provided
8 on first and second reflective mirror sides; and

9 first and second polarizers respectively provided
10 between said first and second Pockels cells and said
11 amplifying portion; wherein

12 said first polarizer reflects light of a first
13 polarization toward said first Pockels cell;

14 said first Pockels cell is driven by application of
15 voltage sufficient to rotate the polarization of
16 transmitted light by 90 degrees in the time from when said
17 light of a first polarization has passed through until it
18 returns via said first reflective mirror, so as to convert
19 light of said first polarization into light of a second

20 polarization, said applied voltage being maintained for a
21 predetermined period so as to rotate the polarization of
22 transmitted light by 90 degrees; and

23 said second Pockels cell is driven by application of
24 voltage when extracting amplified light amplified by making
25 a roundtrip of said amplifying portion from said resonator,
26 so as to convert said amplified light to amplified light of
27 said first polarization;

28 the amplified light of said first polarization being
29 reflected by said second polarizer to be extracted outside
30 of said resonator.

1 **Claim 12 (original):** A regenerative optical amplifier
2 comprising:

3 a resonator having first and second reflective mirrors
4 forming ends of a roundtrip path for light, and an
5 amplifying portion for amplifying light in said roundtrip
6 path;

7 first and second Pockels cells respectively provided
8 on first and second reflective mirror sides;

9 first and second polarizers respectively provided
10 between said first and second Pockels cells and said
11 amplifying portion; and

12 a waveplate provided between said first Pockels cell
13 and said first reflective mirror, for rotating the
14 polarization of light by 90 degrees with each roundtrip;

15 wherein

16 said first polarizer reflects light of a first
17 polarization toward said first Pockels cell;

18 said first Pockels cell is driven by application of
19 voltage sufficient to rotate the polarization of
20 transmitted light by 45 degrees in the time from when said
21 light of a first polarization has been reflected at said
22 first reflective mirror and completed one roundtrip of said
23 first Pockels cell and said waveplate, been converted to
24 light of a second polarization and completed a roundtrip of
25 said amplifying portion side until it returns said first
26 Pockels cell, so as to convert light of said first
27 polarization into light of a second polarization, said
28 applied voltage being maintained for a predetermined period
29 so as to rotate the polarization of transmitted light by 45
30 degrees; and

31 said second Pockels cell is driven by application of
32 voltage when extracting amplified light amplified by making
33 a roundtrip of said amplifying portion from said resonator,
34 so as to convert said amplified light to amplified light of
35 said first polarization;

36 the amplified light of said first polarization being
37 reflected by said second polarizer to be extracted outside
38 of said resonator.

1 **Claim 13 (original):** A regenerative optical amplifier

2 comprising:

3 a resonator having first and second reflective mirrors
4 forming ends of a roundtrip path for light, and an
5 amplifying portion for amplifying light in said roundtrip
6 path;

7 a first Pockels cell provided on said first reflective
8 mirror side, whose optical axis is tilted in a direction
9 such as to rotate the polarization of light by 45 degrees
10 with each roundtrip;

11 a second Pockels cell provided on the second mirror
12 side; and

13 first and second polarizers respectively provided
14 between said first and second Pockels cells and said
15 amplifying portion; wherein

16 said first polarizer reflects light of a first
17 polarization toward said first Pockels cell;

18 said first Pockels cell is driven by application of
19 voltage sufficient to rotate the polarization of
20 transmitted light by 45 degrees in the time from when said
21 light of a first polarization has been reflected at said
22 first reflective mirror and completed one roundtrip of said
23 first Pockels cell and said waveplate, been converted to
24 light of a second polarization and completed a roundtrip of
25 said amplifying portion side until it returns to said first
26 Pockels cell, so as to convert light of said first
27 polarization into light of a second polarization, said

28 applied voltage being maintained for a predetermined period
29 so as to rotate the polarization of transmitted light by
30 180 degrees; and

31 said second Pockels cell is driven by application of
32 voltage when extracting amplified light amplified by making
33 a roundtrip of said amplifying portion from said resonator,
34 so as to convert said amplified light to amplified light of
35 said first polarization;

36 the amplified light of said first polarization being
37 reflected by said second polarizer to be extracted outside
38 of said resonator.

1 **Claim 14 (original):** A regenerative optical amplifier
2 in accordance with claim 11, wherein said second Pockels
3 cell is driven by application of a voltage sufficient to
4 rotate the polarization of transmitted light by 90 degrees
5 in the time from when said amplified light has passed until
6 it returns via said second reflective mirror so as to
7 convert said amplified light into amplified light of said
8 first polarization.

1 **Claim 15 (original):** A regenerative optical amplifier
2 in accordance with claim 11, wherein said second Pockels
3 cell is driven by application of a voltage sufficient to
4 rotate to polarization of transmitted light by 45 degrees
5 from the time when light which has made a roundtrip of said

6 amplifying portion to become said amplified light has
7 completed a roundtrip until prior to said amplified light
8 passing through so as to convert said amplified light into
9 amplified light of said first polarization.